

hemispherical to hemispherical-campanulate, lobes fimbriate-ciliate on the margins; glands 4, stipitate, appendaged; glands and petaloid appendages 1.3–1.5 mm. long and 0.8–1.5 mm. wide, appendages usually constituting from $\frac{2}{3}$ to $\frac{3}{4}$ of the total dimensions, appendages yellowish-white; stamens fertile; stamineal bractlets divided near the summit, pubescent; fruit glabrous, angular, large (5–6 mm. long and 4–5 mm. broad), widest a little above the base and tapering to the blunt apex which may approach 2 mm. in width, reflexed when mature, gynophore glabrous; seeds 3.8–4.5 mm. long, ca. 2 mm. broad near the distal end, gradually tapering through about three-fourths of their length, then more abruptly tapering and attenuate into a caruncle 0.5–0.8 mm. long; seed flattened, but non-angular and with a smooth seed-coat.—TYPE: *Waterfall* and *Goodman's* 4519 from drifting sand, north of the Cimarron River, near Highway no. 281 on the Waynoka sand dunes, Woods County, Oklahoma, Oct. 11, 1947. TYPE deposited in the Bebb Herbarium of the University of Oklahoma. ISOTYPES are in the Gray Herbarium, and in the herbaria of the New York Botanical Garden and the Missouri Botanical Garden.

Associates of *Euphorbia carunculata* include: *Reverchonia arenaria*, *Oenothera latifolia* and *Heliotropium convolvulaceum*. Where the sand dunes are more stabilized *Calamovilfa gigantea* is common, it being the principal stabilizer. Associated with this stage, or its transition to higher stages, we found *Lygodesmia rostrata* abundant, at least locally. *Calamovilfa* gives way to such climax species as *Andropogon scoparius*, *A. Hallii* and *Artemisia filifolia* on the more stabilized dunes.

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A DANGEROUS WEEDY POLYGONUM IN PENNSYLVANIA

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In the late summer of 1946 a specimen of a strange *Polygonum* for Pennsylvania was sent for identification to Dr. John M. Fogg, Jr. at the University of Pennsylvania Herbarium. It was found growing in a neglected nursery belonging to Mr. Joseph B. Gable at Stewartstown, York County, Pennsylvania, where it had become a most troublesome weed.

It has been identified as *Polygonum perfoliatum* L., a native of India, China, Manchuria, Korea, Formosa, Japan and the Philippines. The identity has been checked with specimens at the Academy of Natural Sciences of Philadelphia and specimens at the Gray Herbarium at Harvard University.

The plant made its first appearance in the nursery about ten years ago, when some holly seeds sent from Japan were planted and it came up with the holly. The owner of the nursery became interested in the plant and allowed it to grow. Later in the season, when it produced brilliant china-blue berry-like "fruit," he became more interested in it for its beauty and allowed it to reproduce itself the next year. Since then it has vigorously spread from its original place until it now covers much of the area between the trees in the orchard, the edges of the lanes and the spaces between the nursery rows. Where it has become established it maintains an almost pure stand, choking all other herbaceous plants.

This *Polygonum* belongs to the *Echinocaulon* group. It is a long trailing vine growing to a maximum length of 10 to 12 feet. It forms a dense tangled mat over the ground or climbs into the lower branches of any available tree. The cover thus formed kills all herbaceous plants over which it trails. Thick mats of *Lonicera japonica* Thunb. were completely dead under the tangle of *Polygonum*. *Sambucus canadensis* L. and species of *Rubus* were overgrown and killed by the competition. The tangle in the lower branches of apple trees was thick enough to cover the leaves and cause some defoliation. It seems obvious that the leaves of the *Polygonum* are the chief factor in this struggle for existence as the roots are few in number, fibrous, weak and do not penetrate the soil very deeply.

The stem of the plant is weak, but wiry and covered with recurved spines about 3 mm. long. It is difficult to collect a proper specimen due to the manner in which the stems intertwine and hook themselves together. The leaves are deltoid, placed alternately on the stem and becoming smaller toward the apex of the plant. At each node is a perfoliate cordate stipule varying from 1 cm. to 2 cm. in diameter.

The flowers are in small capitate heads. The flower-color is usually pink, although there is a wide variation in the intensity

of the color. When the achenes are mature, the calyces turn a bright china-blue in color and make a very attractive cluster against the yellowing foliage of the plant in autumn. The achenes are large, measuring 4 mm., globose and shiny black in color. They are shed quite readily when the plant is touched and many of them had germinated and new plants had started to grow in October of 1946 when I visited the nursery. Mr. Jack Swartley, who showed me around, stated that these new plants would be killed by the frost, but some seeds would winter over in the litter and germinate next spring.

Realizing that this plant had become a serious pest, Mr. Gable tried to eradicate it by using a commercial weed killer, 2-4D, but it proved ineffective. The concentration used is not known. The Japanese beetle (*Popillia japonica*) does more damage to the weed during the time of its active above-ground feeding than the weed killer, but after the peak of beetle infestation has passed the plants recover rapidly and continue to grow and reproduce through the mild weather of autumn until late October or early November.

To date, the *Polygonum* has spread to only two neighboring farms. Vigorous and prompt action should be taken to eradicate it while it is confined to this small area, lest it become a worse pest than Japanese honeysuckle, with no hope of ever completely wiping it out.

Inquiries addressed to most of the larger herbaria have yielded only one reference to a former collection of this plant in the United States. Dr. Joseph Ewan of the U. S. D. A. Plant Industry Station in Beltsville, Maryland, writes that "*Polygonum perfoliatum* did appear at the Glenn Dale Introduction Garden, Maryland, at a site where *Meliosa* seed from Nanking, China, had been planted. The *Meliosa* failed to grow but the *Polygonum* appeared; this now comprises W. Cowgill, Feb. 15, 1937, and March 5, 1937, but was evidently eradicated by the usual weeding activities and did not persist at this location."

Specimens of the plant are deposited at the University of Pennsylvania Herbarium.

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